What is claimed is:

1. A frequency-compensated range resistor module for deployment in conjunction with a low-voltage measuring instrument having an input terminal and a ground terminal, to enable measurement of high AC voltages at high frequencies with unusually high accuracy and stability, comprising:

a substantially non-inductive resistor having an elongate body of designated length with connecting means at opposite ends and having a designated resistance value to act in conjunction with the measuring instrument as a required voltage multiplier;

a primary shield assembly of electrically-conductive material, surrounding the resistor, divided into two portions that are electrically insulated from each other: an ungrounded portion electrically connected to a first end of said resistor designated as the input end, and a ground portion electrically connected to the ground terminal of the measuring instrument;

electrical connector means providing electrical connection between the input end of the resistor and a high voltage under test: and

electrical connector means providing electrical connection between a second and opposite end of the resistor, designated as the output end, and the input terminal of the measuring instrument;

the two portions of the primary shield assembly being proportioned, dimensioned and arranged in a manner to enhance AC voltage measurement accuracy at high frequencies by virtue of high frequency compensation provided by a resultant pattern of capacitance between each portion of the primary shield assembly and the body of the resistor creating a favorable combination of capacitive and AC voltage gradient distributed along the length of the body of the resistor.

2. The frequency-compensated range resistor module as defined in claim 1 wherein the primary shield assembly is rectangular in shape and comprises;

a first end panel, a first side panel and a bottom panel

formed integrally to constitute the ungrounded portion of the primary shield assembly, connected to the input end of the resistor and thus receiving the high voltage under test;

a second end panel, a second side panel and a top panel formed integrally to form the grounded portion of the primary shield assembly, provided with connector means to be grounded to the ground terminal of the measuring instrument; and

electrical insulating means for preventing unwanted contact between the ungrounded portion and the grounded portion of the primary shield assembly.

3. The frequency-compensated range resistor module as defined in claim 2 wherein the resistor is located in an inclined disposition extending diagonally within the primary shield assembly with the input end of the resistor located in the ungrounded portion of the primary shield assembly in a corner thereof formed by the first end panel, the first side panel and the bottom panel, and the output end of the resistor located in the grounded portion of the primary shield assembly in a corner thereof formed by the second end panel, the second side panel and the top panel, the two corners being located diagonally opposite each other in the primary shield assembly.

4. The frequency-compensated range resistor module as defined in claim 3 further comprising:

an electrically energized cooling fan mounted onto the primary shield assembly; and

a system of ventilation openings configured in the primary shield assembly located so as to enable the cooling fan to provide a substantial flow of cooling air flow past the resistor.

5. The frequency-compensated range resistor module as defined in claim 3 further comprising:

a compensating network branch, including at least one capacitor and a resistor connected in series, connected between the output end of the resistor and the grounded portion of the primary shield assembly, wherein resistance and capacitance

values are optimized for high frequency measurement accuracy.

6. The frequency-compensated range resistor module as defined in claim 4 further comprising a mounting flange extending from the first end panel and providing mounting support for components of the compensating network branch.

7. The frequency-compensated range resistor module as defined in claim 3 further comprising:

an electrically conductive outer shield assembly surrounding the primary shield assembly and connected to the grounded portion thereof, including insulating means for preventing the outer shield assembly from contacting the ungrounded portion of the primary shield assembly.

8. The frequency-compensated range resistor module as defined in claim 4 further comprising:

an electrically conductive outer shield assembly, configured with perforations for cooling air flow, surrounding the primary shield assembly and connected to the ground portion thereof, including insulating means for preventing the outer shield assembly from contacting the ungrounded portion of the primary shield assembly; and

first and second end panels of the outer shield assembly , each fitted with an electrical connector for input and output respectively.

9. A precision high voltage AC measuring system with enhanced accuracy at high frequencies, comprising:

a low-voltage measuring instrument having an input terminal and a ground terminal;

a substantially non-inductive resistor of designated resistance, with an elongated body, to act in conjunction with the measuring instrument as a required voltage multiplier, having an input end connected to a high voltage under test and an output end connected to the input terminal of the low-voltage measuring instrument; and

a conductive surface facing the resistor and acting in the manner of a plate of a capacitor plate of which a second plate is formed by the resistor body, the conductive surface being connected to the high voltage under test and being configured and arranged to provide high frequency compensation of the resistor through neutralization of stray capacitance between the resistor and ground.

10. The precision high voltage AC measuring system as defined in claim 9 further comprising a primary shield assembly, surrounding the resistor, comprising;

a grounded portion facing the resistor and forming a plate of a capacitance gradient pattern distributed along the length of the resistor body;

an ungrounded portion, constituting the conductive surface facing the resistor, connected to the high voltage under test, forming a capacitance gradient pattern distributed along the length of the resistor body;

the grounded portion and the ungrounded portion being configured, dimensioned, located and arranged in a manner to enhance AC voltage measurement accuracy at high frequencies by virtue of high frequency compensation of the resistor through neutralization of stray capacitance to ground provided by a resultant pattern of voltage and capacitance gradients along the body of the resistor.

11. The precision high voltage AC measuring system as defined in claim 10 wherein the primary shield assembly is rectangular in shape and comprises;

a first end panel, a first side panel and a bottom panel formed integrally to constitute the ungrounded portion of the primary shield assembly;

a second end panel, a second side panel and a top panel formed integrally to constitute the grounded portion of the primary shield assembly;

connector means connecting the grounded portion of the primary shield assembly to the ground terminal of the measuring

instrument.

12. The precision high voltage AC measuring system as defined in claim 11 wherein the resistor is located in an inclined disposition extending diagonally within the primary shield assembly with the input end of the resistor located in the ungrounded portion of the primary shield assembly in a corner thereof formed by the first end panel, the first side panel and the bottom panel, and the output end of the resistor located in the grounded portion of the primary shield assembly in a corner thereof formed by the second end panel, the second side panel and the top panel, the two corners being located diagonally opposite each other in the primary shield assembly.

13. The precision high voltage AC measuring system as defined in claim 11 further comprising:

an electrically energized cooling fan mounted onto the primary shield assembly; and

a system of ventilation openings configured in the primary shield assembly located so as to enable the cooling fan to provide a substantial flow of cooling air flow past the resistor.

14. The precision high voltage AC measuring system as defined in claim 11 further comprising;

a compensating network branch, including at least one capacitor and a resistor connected in series, connected between the output end of the resistor and the grounded portion of the primary shield assembly, with resistance and capacitance values optimized for high frequency measurement accuracy.

15. The precision high voltage AC measuring system as defined in claim 14 further comprising a mounting flange extending from the first end panel and providing mounting support for components of the compensating network branch.

16. The precision high voltage AC measuring system as defined in

claim 11 further comprising:

an electrically conductive outer shield surrounding the primary shield assembly and connected to the ground portion thereof, including insulating means for preventing the outer shield from contacting the ungrounded portion of the primary shield assembly.

17. The precision high voltage AC measuring system as defined in claim 4 further comprising:

an electrically conductive outer shield, configured with perforations for ventilation, surrounding the primary shield assembly and connected to the ground portion thereof, including insulating means for preventing the outer shield from contacting the ungrounded portion of the primary shield assembly; and

first and second end panels of the outer shield, each fitted with an electrical connector receptacle for input and output respectively.

18. A method for enhancing high voltage AC measurement accuracy at high frequencies, in a measuring system wherein a multiplier resistor having an elongated body, with an input end receiving high AC voltage under test, is deployed in series with an input terminal of a low voltage measuring instrument, comprising the steps of:

providing a primary shield assembly, surrounding the resistor, having an ungrounded conductive portion;

connecting the ungrounded conductive portion of the primary shield assembly to the input end of the resistor receiving the high AC voltage under test; and

configuring and locating the ungrounded conductive portion of the primary shield assembly relative to the resistor in a manner to enhance AC voltage measurement accuracy at high frequencies by virtue of high frequency compensation of the resistor through neutralization of stray capacitance to ground provided by a resultant pattern of voltage and capacitance gradients along the body of the resistor.